chapter 1

Why Design Matters

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GIVEN THAT YOU'RE reading this book, you probably don't need much convincing that design is, in fact, important. Good design has clearly been fundamental to the success of many of the world's largest companies, and interest in and awareness of design has exploded during the past couple decades. But exactly what kind of impact can design have? More important, what really defines the bounds of design?

Skillful use of good design can create experiences that are emotionally moving. At the same time, good design – through improved communication and clarity – can make things easier to use. The characteristics of good design can bring increased credibility to your company and ultimately influence the decisions of your customers. Skillful use of good design can affect emotions, build credibility, and earn trust. Finally, good design can actually make things easier to use. But to really achieve these results, you have to understand design holistically.

I witnessed firsthand the power of design in one of the world's oldest functioning buildings. While I was studying the origins of modern typography in Rome, my studio was just a few blocks from the Pantheon. I spent hours sitting inside the building and people-watching. I'm not normally entertained by watching people, but inside the Pantheon, watching people is a different experience than it is elsewhere. Why? Because people-watching in the Pantheon gives you the opportunity to see the reactions of people who are walking into the building for the very first time.

The reaction of a person walking into the Pantheon for the first time – though different for everyone – follows a predictable pattern: He walks through the doors, in a hurry, guidebook in hand and comfortable sneakers on his feet. Then, once he looks up, everything about his demeanor changes. He begins walking in slow motion. His head falls back limply on his neck, as if he were a child seeing fireworks for the first time. His jaw drops, and at some point, a "wow" and a sigh of amazement manage to escape his mouth. He may lift a camera to his eyes – in an attempt so feeble as to be entertaining – hoping that he may later relive the experience at will.

This is why I loved to people-watch in the Pantheon. I had experienced what they were going through myself, and – although the Pantheon amazes me to

this day – there's something magical about seeing what is little more than a pile of stone, arranged in a certain way, have this affect on grown adults.

What Design Really Is

Steve Jobs once said, "In most people's vocabularies, design is a veneer. It's interior decorating. It's the fabric of the curtains of the sofa. But to me, nothing could be further from the meaning of design. Design is the fundamental soul of a human-made creation that ends up expressing itself in successive outer layers of the product." It's this layering, the interconnectedness of these different factors, that manifests itself in the impact of the Pantheon.

The emotional reactions that I witnessed over and over in the Pantheon are exactly as intended. The Pantheon, the current design of which was commissioned by Emperor Hadrian in 126 AD, was built to be the temple of all the gods of Ancient Rome. So, it's fitting that walking into the building would be an awe-inspiring experience. If it's good enough for Venus, the goddess of love and beauty, it's bound to be pretty amazing to you and me. This intention behind the design of the building – the impact it was meant to have – is definitely one of the "layers" that Steve Jobs was referring to.

The way that the interior of the Pantheon achieves this reaction is through conceptually representing the heavens. Emperor Hadrian wanted those who entered the Pantheon to be awe-struck. This is the house of the gods, after all. The interior does this by being in the form of a perfect sphere – it is as tall as it is wide, taking the form of a semicircular dome on top of a cylinder. At 142 feet, it remains the tallest unreinforced concrete dome in the world – nearly two millennia after its creation. At the very top of this dome, a 30-foot wide *oculus* (hole) projects a beam of sunlight into the building, lighting the interior. This is how the Pantheon has such an impact. Upon entering, you're enveloped by another world, complete with its very own "sun" (see Figure 1-1).

Part of the impact of the Pantheon comes from the relationship between this incredible spatial experience and the materials used to create it. To achieve this form, the Pantheon pushes the limits of the materials from which it is built, which helps explain why a dome of this height hasn't been created with the same technology since. So much reinforcement is needed to keep this dome

standing that the walls of the dome are 20 feet thick at the base of the dome and only 4 feet thick at the edge of the oculus.

FIGURE 1-1 The Pantheon features the world's tallest unreinforced concrete dome. Light (and sometimes rain) floods into the interior through a hole in the ceiling.

To better manage the weight of the concrete, hard and durable basalt was added to the mix for the foundations, with the mix gradually getting lighter, until pumice rock was used toward the oculus. This way, the base of the dome has the weight and strength to support the rest of the dome, while the upper parts of the dome are thin and light, reducing their load upon the base.

To make the dome material even lighter, a series of recessed squares, or *coffers,* are formed within the dome. These coffers, which exist by engineering necessity, contribute to the impact of the interior. They rhythmically radiate from the oculus, creating visual interest, while contrasting with the smooth concrete that immediately surrounds the oculus.

In concert with these technical considerations, the designers of the Pantheon had to make some aesthetic choices as well. Because the floor is too large to be made with one piece of marble, it's made up of various pieces. This marble is laid out in a pattern of basic circular and square forms, which are in geometric harmony with the rest of the interior.

The marble used within the Pantheon was in different colors, as well, so care had to be taken to ensure that there was harmony and beauty in how the various colors of marble interacted with one another.

All these factors worked together and were considered so masterfully that the Pantheon is one of the most influential buildings in the history of architecture. From St. Peter's (just down the road from the Pantheon, in Vatican City) to the U.S. Capitol building, the dome of the Pantheon has inspired the design of buildings all over the world.

This careful marriage of all the "layers" of design are what makes a design beautiful, timeless, and, ultimately, successful in reaching its goals. The intentions of a design work together with the limitations of the technology used to create the design, as well as with harmonies of form, geometry, and color. All these pieces, all these layers, are inextricably linked with one another, forming the whole of what truly is design.

What Design Is Not

Like Steve Jobs said, many people think of design as some kind of afterthought – the upholstery on a couch, the logo on a business card, or the visual look of a button on a website. In pursuit of understanding design, many are led down the fruitless path of approaching design with this definition in mind. They may try to learn how to create a particular visual effect, repeatedly refer to lists of do's and don'ts, or try adding visual elements to a design that do little but create clutter.

To keep yourself creating good design, you need to learn how to understand all the layers that create great design. To create great design: Don't draw ponies.

Chances are, when you were in grade school, there was a kid in your class who everyone thought of as a good artist. His big secret was, he only knew how to draw one thing. In my third-grade class, there was a girl who could draw ponies. She drew beautiful ponies. They had big, juicy eyes and long, flowing manes. They had smooth, powerful muscles, and looked as if they could leap off the page. The other kids in class would crowd around her as she drew pony after beautiful pony. Then, one day, someone asked her to draw a portrait. "Draw a picture of me!" he said. The girl looked scared. "Yeah, draw him," the

other kids cheered. So, reluctantly, she tried to draw the boy. As you can probably imagine, the resulting drawing looked nothing like the boy at all. His eyes were lifeless, flattened footballs. His hair was a random mess of scribbles. "I'm not very good at drawing people," she said, sheepishly. Everyone seemed disappointed, but they still wanted to believe that she was a good artist.

I was too young to figure it out then, but eventually I got it. All the ponies the girl drew were essentially the same. Most of them had the same pose. The heads were at the same angle. Maybe the front hoof of each of the ponies was pulled up, as if the pony were ready to begin a gallop. She probably had just learned to draw a pony from one, maybe two angles – maybe from a picture in a magazine – and just repeated that over and over again. She was really good at drawing ponies this way.

But the pony-drawing girl didn't conceptually understand ponies. She didn't understand the "layers" that make up a pony. Hey, she was in third grade, so that's okay. But she didn't understand pony anatomy, where all the muscles really were, or how they might change shape as the pony changed poses.

The drawing of her classmate didn't look right because she didn't know human anatomy, either. She didn't understand the way that tear ducts are on the inner part of the eye, or the way that an eyelid is constructed, or exactly how they tuck underneath the eyebrow ridge. She didn't understand how individual hairs on a person's head interact with each other and clump together. She didn't understand technically how these things worked, she didn't understand how a viewer perceives these things, and she didn't understand how to use a pencil and paper to bridge the gap between these two worlds.

Of course, she didn't understand these things – she was in third grade. Probably, someday, she progressed as an artist, or maybe today she's the most famous artist in the pony world.

The point is that to truly be adept at designing something, you have to understand how it works. You have to understand the nature of what you're building, how what you're building is perceived, and how you can use your tools to make your vision happen. Otherwise, you aren't designing. You're creating a veneer. You're drawing ponies. Don't draw ponies.

The Layers of Design

It's important to understand the layers that make up a design, because getting those layers to work together is the key to creating designs that look good, that solve problems, and that ultimately influence your users.

On the web, more than anywhere else, using the layers of design appropriately is critical to success. People are exposed to more information today than ever before, and there just isn't enough time or attention for us to process all of it. So, we use shortcuts to decide what is deserving of our ever-more-precious attention.

In psychology, these shortcuts are called *heuristics.* Heuristics help us solve complex problems and make complex decisions by using "rules" that are either programmed into us by evolution or learned from our own experiences.

If you see a pair of shoes that you're considering buying, you'll immediately make a judgment on whether this brand of shoes is for you. How does the way it's constructed affect the look of the shoes? Do the colors appeal to you? Is it your style? You use heuristics based upon how similar these shoes are to shoes that you've had past experiences with.

These heuristics are in heavy use as people make decisions on the web. We make split-second judgments about how much we trust a news site to give us accurate information, how much we trust an e-commerce site to process our payments securely, or whether we believe a nonprofit will use our money wisely.

It turns out, in all these cases, design is the single most important heuristic we process when deciding whether a site is credible.

The factors that influence design are countless, with fuzzy boundaries. You could ask a dozen different design experts what factors manifest themselves in a piece of design, and although you'd get a dozen different sets of answers, they would all pretty much cover the same things. Here are some of the layers of design that I'll talk about in this book.

How design affects credibility on the web

In a study done at Stanford University, B. J. Fogg and his colleagues presented participants with two websites and asked them to rank the sites' credibility, as well as provide comments about what they based their rankings upon.

When the results were processed, Fogg found that design had an overwhelming influence in participants' ratings of the credibility of the websites in the study. An incredible 46 percent of all comments about the credibility of the sites were related to design. Participants said trustworthy sites were "more professional looking," had a "higher-quality look and feel," or "just [looked] more credible." Some participants even went so far as to specifically mention the color schemes or choices of fonts in sites that looked credible to them.

Although well-designed sites enjoyed high credibility ratings, sites that were poorly designed were viewed as less credible. Participants didn't trust a site if it was "not very professional looking," if the "design [was] sloppy," or if it looked "like it was put together in five minutes."

But just as drawing a pretty pony doesn't make you a good artist, creating a pretty website doesn't make you a good designer. Participants were skeptical of sites that looked inappropriately polished, giving negative comments suggesting that certain sites looked as if they were "designed by a marketing team."

The design of a site has to be appropriate, and considering all the layers that make a good design is critical in creating effective designs.

Aside from the visual look of sites being important to their perceived credibility, the results of Fogg's study also suggested that some of the more subtle aspects of design also were extremely important. Comments about the information design and structure of the sites in the study were the second most common, comprising over 28 percent of all the comments processed. Participants praised some sites for being "well organized," while criticizing other sites because the "information [was] badly presented."

So, together, the visual look of a site – along with the way the information was organized – accounted for nearly 75 percent of all comments about whether participants trusted a site or not. Moreover, the participants' comments were sensitive to design that was inappropriate for the site in question.

Users know when you're drawing ponies, so to create successful design, you need to understand how the layers of design interact.

Purpose

Every piece of design has a purpose or an intention. The Pantheon was built as a temple of the gods, the iPod was built as a portable device for playing music, and every website or application you create has its own set of purposes.

The purpose of a design is wrapped up with economic factors as well. The forms of letters have been influenced throughout time by the need for efficiency in communicating language (see Chapter 3). As I'll explain in Chapter 2, and as demonstrated by the skeptical comments toward inappropriately polished design in Fogg's study (see the earlier sidebar), these economic factors help dictate the quality of design that a particular artifact should have.

The purposes and intentions of a design interact with the characteristics and needs of a user. In Chapter 2, I'll explain how you can better account for these characteristics when developing the structure of your design. In Chapter 9, I'll talk about how you can account for cultural color considerations.

Every user needs to be able to access information clearly, and this communication is the very foundation of design. In Chapter 3, I'll explain the differences between various fonts in historical context. In Appendix A, I'll explain how these historical considerations affect the mood that a typeface conveys. In Appendix B, I'll show you how some of the tiniest typographic details can have dramatic effects on the information being communicated. Most important, in Chapter 7, I'll illustrate how you can attach the appropriate amount of importance to various pieces of information within your designs.

Medium and technology

Every piece of design is created by a particular set of materials, with certain methods of construction that influence the design. The limitations of creating a concrete dome caused the Pantheon to feature recessed coffers throughout the dome; the latest MacBook Pro is created from a single piece of aluminum, a production consideration that influences its design; and, as I'll talk about in Chapter 4, designs created with HTML and CSS tend to have certain characteristics that lend themselves to the capabilities and limitations of that technology.

In Chapter 4, I'll go into more detail on how the technologies behind the Internet have created design trends, such as the Web 2.0 look. In Chapter 3, I'll explain how the limitations of the pixel have made some of the longest-lived typeface designs incompatible with use on the web. In Chapter 8, you'll learn about how the technologies with which we represent colors can influence our color choices designing across mediums or when choosing colors for information graphics. In Appendix A, I'll explain how the various technologies used to create letters have, over time, led to new styles of typefaces.

Aesthetic decisions

Working in concert with design intentions and characteristics of medium and technology are the aesthetic considerations of design. When you hear it called that, it probably brings to mind a lot of what people think of design as – the veneer of design. But in many ways, the aesthetic decisions of design are invisible.

The geometric relationships between things in a design are not something you can see, but they make a huge impact on the visual harmony, the sense of organization of content, and the overall "clean" feeling of a design. I'll talk about these hidden geometric relationships in Chapter 5, and I'll talk about how these geometric relationships work with other hidden principles of design in Chapter 6.

The colors we use in designing are, of course, visible. But designers make some important though invisible decisions when working with colors. After explaining how we perceive colors with our visual system, and how we represent colors with various technologies (Chapter 8), I'll explain how colors can influence our emotions, I'll explain how colors interact with one another, and I'll present some common formulas for choosing colors that go well together (Chapter 9).

Conclusion

By gaining an understanding of all the various factors that affect design, you can create designs with emotive power, clarity, and beauty. Throughout the rest of this book, I'll break down all these factors, so you can see the world through new eyes. Let's get started, shall we?